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Ultrasonic Backscatter coefficient, Attenuation Coefficients and Speed of Sound measurement estimates using Human Colon Cancer Cells. JUDENE THOMAS, None — Ultrasound is increasingly being used in therapeutic applications, however, little is known about the direct effects of various ultrasonic frequencies on cells. We aim to demonstrate the efficacy of ultrasonic measurements and the effect of frequency variations on cancer cells. The attenuation, speed of sound and backscatter coefficients of human colon cancer cell lines were measured using an emitting and receiving transducer, a sine-wave function generator as well as an amplifier. The sample was placed between transducers, each connected to a function generator and amplifier, and the time when the signal is received was recorded with and without the sample. A backscatter experiment at five varying frequencies using a single element focused transducer connected to a pulsar receiver and an oscilloscope was then performed. When the sample was aligned with the transducer a signal was recorded at 9 points and the coefficient calculated using Matlab. Different settings of frequency in an ultrasonic treatment protocol can lead to different impacts on proliferation, morphology, differentiation and may be used to stimulate or inhibit the growth of individual cell types, potentially leading to ground breaking therapies for various types of cancers and other diseases.

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None

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